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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,830	07/03/2003	Roberto Rambaldi	SGSTP009D1	6799

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BEYER WEAVER LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER	
HANNETT, JAMES M	
ART UNIT	**PAPER NUMBER**
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/613,830	RAMBALDI ET AL.
	Examiner	Art Unit
	James M. Hannett	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-22,38-49,51 and 52* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-22,38-49,51 and 52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/3/2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/15/2007 has been entered.

Response to Arguments

Applicant's arguments filed 10/15/2007 have been fully considered but they are not persuasive. The applicant argues that Sweetser doe not teach the step of delaying reading the selected pixel for a defined length of time that corresponds approximately to the exposure time of the pixel. The examiner disagrees and asserts that in order to read out an accumulated charge from a pixel, a delay is inherent in order to allow charge to accumulate in the pixel. This period of accumulating charge is the exposure time. Sweetser teaches on Column 4, Lines 30-35 the details of this method. Furthermore, the examiner views the claimed "delay" as the exposure time.

Applicant's arguments with respect to claims 22 and 38 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1: Claims 17-21, 47 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,532,484 Sweetser et al.

2: As for Claim 17, Sweetser et al teaches on Column 4, Lines 45-64 and depicts in Figures (1, 3 and 4) a method of testing a selected pixel to determine whether it is faulty. Sweetser et al teaches in Figure 3 and on Column 8, Lines 12-61 the structure for a image sensor in which the pixels (100) are initially charged to a bias voltage using voltage sources (116) This initial charging to the bias voltage is a resetting process to reset the pixels to an appropriate initial voltage. Therefore, Sweetser et al teaches electronically resetting the selected pixel (100) to a defined charge. Sweetser et al further teaches on Column 8, Lines 55-58 that the signals on the pixels (100) are read out of the image sensor after a period of time to allow charge to accumulate (exposure time) and sent to the video processor (24). Therefore, Sweetser et al teaches reading the selected pixels (100) output. Sweetser et al further teaches on Column 10, Lines 6-51 that after the pixels are charged to the appropriate charge, a detection and substitution module compares the read output signal (32) to a reference value (162). Therefore, Sweetser et al teaches comparing the selected pixels output (32) to an expected value (reference value 162) based upon the defined charge provided to the selected pixel (the read out charge is based upon the charge input to the pixels). Sweetser et al teaches on Column 10, Lines 39-43 if the selected pixels output deviates from the expected value (reference value 162) by more than a defined threshold, then the pixel is characterized as defective. Therefore, the examiner views a pixel exceeding the threshold as being completely corrupted and a pixels that does not exceed the threshold as being partially corrupted.

3: In regards to Claim 18, Sweetser et al teaches on Column 2, Lines 13-28 and on Column 9, Lines 30-43 that if a pixels is designated as defective, the pixels value is substituted with a value equivalent to a combination of signals from adjacent pixels. And that if the pixel is not deemed defective, the value of the pixel is adjusted using the gain normalizer (154) to adjust the signal according to the predetermined sensitivity characteristics of each pixel. Therefore, Sweetser et al teaches If the selected pixel is partially corrupted pixel (not flagged as defective), it is to be imaged by a first technique (Adjusted using gain normalizer 156) during readout and if the selected pixel is completely corrupted (defective), it is to be imaged by a second technique (signal replacement) during readout.

4: As for Claim 19, Sweetser et al teaches on Column 10, Lines 36-51 determining whether the selected pixel is partially (below threshold and only requires gain adjustment) or completely corrupted (defective and requires pixel substitution) comprises determining how far the selected pixels output deviates (difference between output signal and reference signal) from the expected value (reference value), such that if the selected pixel's output deviates by more than a defined amount (exceeding the threshold) from the expected value (reference signal 162) deeming the selected pixel to be completely corrupted (defective) and if the selected pixel's output deviates by no more than a defined amount (does not exceed the threshold) from the expected value (162) deeming the selected pixel to be partially corrupt (only requiring gain adjustment).

5: In regards to Claim 20, Sweetser et al teaches on Column 2, Lines 13-28 and on Column 9, Lines 30-43 that if a pixels is designated as defective, the pixels value is substituted with a value equivalent to a combination of signals from adjacent pixels. And that if the pixel is not deemed defective, the value of the pixel is adjusted using the gain normalizer (154) to adjust the

signal according to the predetermined sensitivity characteristics of each pixel. Therefore, Sweetser et al teaches the first correction technique comprises adjusting the output of the selected pixel (gain adjustment) and wherein the second correction technique comprises replacing the output of the selected pixel with an average of the outputs of pixels located about the selected pixel. (Column 5, Lines 45-50)

6: As for Claim 21, Sweetser et al teaches on Column 6, Lines 11-22 selecting a pixel to test.

7: As for Claim 47, Sweetser et al teaches on Column 4, Lines 45-64 and depicts in Figures (1, 3 and 4) An apparatus for characterizing a pixel. Sweetser et al teaches in Figure 3 and on Column 8, Lines 12-61 the structure for a image sensor in which the pixels (100) are initially charged to a bias voltage using voltage sources (116) This initial charging to the bias voltage is a resetting process to reset the pixels to an appropriate initial voltage. Therefore, Sweetser et al teaches setting a pixel voltage to a reset voltage, wherein the reset voltage corresponds to the state of the pixel when the pixel has been exposed to substantially no radiation (Column 8, Lines 51-57). Sweetser et al teaches a method of testing a selected pixel to determine whether it is faulty. electronically resetting the selected pixel (100) to a defined charge. Sweetser et al further teaches on Column 8, Lines 55-58 that the signals on the pixels (100) are read out of the image sensor and sent to the video processor (24). Therefore, Sweetser et al teaches reading the selected pixels (100) output. Sweetser et al further teaches on Column 10, Lines 6-51 that after the pixels are charged to the appropriate charge, a detection and substitution module compares the read output signal (32) to a reference value (162). Therefore, Sweetser et al teaches comparing the selected pixels output (32) to an expected value (reference value 162) based upon the defined

charge provided to the selected pixel (the read out charge is based upon the charge input to the pixels). Sweetser et al teaches on Column 10, Lines 39-43 if the selected pixels output deviates from the expected value (reference value 162) by more than a defined threshold, then the pixel is characterized as defective. Therefore, the examiner views a pixel exceeding the threshold as being completely corrupted and a pixels that does not exceed the threshold as being partially corrupted. Sweetser et al further teaches on Column 8, Lines 55-58 that the signals on the pixels (100) are read out of the image sensor after a period of time to allow charge to accumulate (exposure time) and sent to the video processor (24). Therefore, Sweetser et al teaches reading the selected pixels (100) output.

8: In regards to Claim 48, Sweetser et al teaches on Column 2, Lines 13-28 and on Column 9, Lines 30-43 that if a pixels is designated as defective, the pixels value is substituted with a value equivalent to a combination of signals from adjacent pixels. And that if the pixel is not deemed defective, the value of the pixel is adjusted using the gain normalizer (154) to adjust the signal according to the predetermined sensitivity characteristics of each pixel. Therefore, Sweetser et al teaches if the pixel is partially corrupted (is not defective and only requires gain adjustment), it is to be imaged by a first technique during readout (gain adjustment) and if the selected pixel is completely corrupted (defective), it is to be imaged by a second technique during readout (signal replacement), wherein the first and second techniques are different.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9: Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,532,484 Sweetser et al

10: In regards to Claim 49, Sweetser et al teaches on Column 10, Lines 36-51 determining whether the selected pixel is partially (below threshold and only requires gain adjustment) or completely corrupted (defective and requires pixel substitution) comprises determining how far the selected pixels output deviates (difference between output signal and reference signal) from the expected value (reference value), such that if the selected pixel's output deviates by more than a defined amount (exceeding the threshold) from the expected value (reference signal 162) deeming the selected pixel to be completely corrupted (defective) and if the selected pixel's output deviates by no more than a defined amount (does not exceed the threshold) from the expected value (162) deeming the selected pixel to be partially corrupt (only requiring gain adjustment). Therefore, Sweetser et al teaches the type of pixel correction mechanism applied is based on whether the difference between the output pixel value and the reference value exceeds a threshold. Furthermore, Sweetser et al teaches on Column 3, Lines 3-8 that the threshold value may represent the expected signal variation in neighboring pixels viewing a high contrast scene as limited by the thermal imaging systems modulation transfer function and further states on Column 4, Lines 65-67 and on Column 5, Lines 1-12 that defective pixels are pixels that are totally inoperative or have sensitivity characteristics that are undesirably high or low. However, Sweetser et al does not explicitly say that the threshold value is set to a value that will indicate that a defective pixel is saturated.

However, Official Notice is taken that it was well known in the art at the time the invention was made that defective pixels that are totally inoperative or have sensitivity characteristics that are undesirably high will saturate very quickly and that it was common practice to designate saturated pixels in an image as defective.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the threshold value of Sweetser et al to a value that represents if a pixel is saturated in order to eliminate all the saturated pixels from the image and therefore, improve image quality.

11: Claims 22, 38, 39, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,532,484 Sweetser et al in view of USPN 5,654,537 Prater.

12: In regards to Claim 22, Sweetser et al teaches on Column 4, Lines 45-65 exposing the pixel to a defined amount of test radiation, after electronically resetting the selected pixel and prior to reading the selected pixels output. However, does not teach that the reset circuit contains a switching transistor associated with the pixel, discharging the photodiode associated with the pixel and switching off the transistor associated with the pixel in order to reset the pixels.

Prater teaches the specific pixel structure for pixels in an image sensor array on Figure 2 and teaches that in order to reset the pixel a switching transistor (54) is provided and the photodiode (58) is discharged and the switching transistor (32) is turned off in order to reset the pixel Column 3, Lines 4-45. Prater teaches that this method is advantageous because it produces an accurate reset value.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the reset circuitry of Prater for the reset system of Swetser et al in order to produce an accurate reset value.

13: As for Claim 38, Sweetser et al teaches on Column 4, Lines 45-64 and depicts in Figures (1, 3 and 4) An apparatus for characterizing a pixel. Sweetser et al teaches in Figure 3 and on Column 8, Lines 12-61 the structure for a image sensor in which the pixels (100) are initially charged to a bias voltage using voltage sources (116) This initial charging to the bias voltage is a resetting process to reset the pixels to an appropriate initial voltage. Therefore, Sweetser et al teaches setting a pixel voltage to a reset voltage, wherein the reset voltage corresponds to the state of the pixel when the pixel has been exposed to substantially no radiation (Column 8, Lines 51-57). Sweetser et al teaches a method of testing a selected pixel to determine whether it is faulty. electronically resetting the selected pixel (100) to a defined charge. Sweetser et al further teaches on Column 8, Lines 55-58 that the signals on the pixels (100) are read out of the image sensor and sent to the video processor (24). Therefore, Sweetser et al teaches reading the selected pixels (100) output. Sweetser et al further teaches on Column 10, Lines 6-51 that after the pixels are charged to the appropriate charge, a detection and substitution module compares the read output signal (32) to a reference value (162). Therefore, Sweetser et al teaches comparing the selected pixels output (32) to an expected value (reference value 162) based upon the defined charge provided to the selected pixel (the read out charge is based upon the charge input to the pixels). Sweetser et al teaches on Column 10, Lines 39-43 if the selected pixels output deviates from the expected value (reference value 162) by more than a defined threshold, then the pixel is characterized as defective. Therefore, the examiner views a pixel exceeding the threshold as

being completely corrupted and a pixels that does not exceed the threshold as being partially corrupted. However, does not teach that the reset circuit contains a switching transistor associated with the pixel, discharging the photodiode associated with the pixel and switching off the transistor associated with the pixel in order to reset the pixels.

Prater teaches the specific pixel structure for pixels in an image sensor array on Figure 2 and teaches that in order to reset the pixel a switching transistor (54) is provided and the photodiode (58) is discharged and the switching transistor (32) is turned off in order to reset the pixel Column 3, Lines 4-45. Prater teaches that this method is advantageous because it produces an accurate reset value.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the reset circuitry of Prater for the reset system of Swetser et al in order to produce an accurate reset value.

14: In regards to Claim 39, Sweetser et al teaches on Column 2, Lines 13-28 and on Column 9, Lines 30-43 that if a pixels is designated as defective, the pixels value is substituted with a value equivalent to a combination of signals from adjacent pixels. And that if the pixel is not deemed defective, the value of the pixel is adjusted using the gain normalizer (154) to adjust the signal according to the predetermined sensitivity characteristics of each pixel. Therefore, Sweetser et al teaches the type of pixel correction mechanism applied is based on whether the pixel is partially or completely corrupted (defective or not defective).

15: As for Claim 51, Sweetser et al teaches on Column 4, Lines 45-64 and depicts in Figures (1, 3 and 4) An apparatus for characterizing a pixel. Sweetser et al teaches in Figure 3 and on Column 8, Lines 12-61 the structure for a image sensor in which the pixels (100) are initially

charged to a bias voltage using voltage sources (116) This initial charging to the bias voltage is a resetting process to reset the pixels to an appropriate initial voltage. Therefore, Sweetser et al teaches setting a pixel voltage to a reset voltage, wherein the reset voltage corresponds to the state of the pixel when the pixel has been exposed to substantially no radiation (Column 8, Lines 51-57). Sweetser et al teaches a method of testing a selected pixel to determine whether it is faulty. electronically resetting the selected pixel (100) to a defined charge. Sweetser et al further teaches on Column 8, Lines 55-58 that the signals on the pixels (100) are read out of the image sensor and sent to the video processor (24). Therefore, Sweetser et al teaches reading the selected pixels (100) output. Sweetser et al further teaches on Column 10, Lines 6-51 that after the pixels are charged to the appropriate charge, a detection and substitution module compares the read output signal (32) to a reference value (162). Therefore, Sweetser et al teaches comparing the selected pixels output (32) to an expected value (reference value 162) based upon the defined charge provided to the selected pixel (the read out charge is based upon the charge input to the pixels). Sweetser et al teaches on Column 10, Lines 39-43 if the selected pixels output deviates from the expected value (reference value 162) by more than a defined threshold, then the pixel is characterized as defective. Therefore, the examiner views a pixel exceeding the threshold as being completely corrupted and a pixels that does not exceed the threshold as being partially corrupted. However, does not teach that the reset circuit contains a switching transistor associated with the pixel, discharging the photodiode associated with the pixel and switching off the transistor associated with the pixel in order to reset the pixels.

Prater teaches the specific pixel structure for pixels in an image sensor array on Figure 2 and teaches that in order to reset the pixel a switching transistor (54) is provided and the

photodiode (58) is discharged and the switching transistor (32) is turned off in order to reset the pixel Column 3, Lines 4-45. Prater teaches that this method is advantageous because it produces an accurate reset value.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the reset circuitry of Prater for the reset system of Swetser et al in order to produce an accurate reset value.

16: In regards to Claim 52, Sweetser et al teaches on Column 4, Lines 45-64 and depicts in Figures (1, 3 and 4) An apparatus for characterizing a pixel. Sweetser et al teaches in Figure 3 and on Column 8, Lines 12-61 the structure for a image sensor in which the pixels (100) are initially charged to a bias voltage using voltage sources (116) This initial charging to the bias voltage is a resetting process to reset the pixels to an appropriate initial voltage. Therefore, Sweetser et al teaches setting a pixel voltage to a reset voltage, wherein the reset voltage corresponds to the state of the pixel when the pixel has been exposed to substantially no radiation (Column 8, Lines 51-57).

Allowable Subject Matter

17: Claims 40-46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Hannett whose telephone number is 571-272-7309. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James M. Hannett
Examiner
Art Unit 2622

JMH
November 5, 2007